What I claim is:

Claim 1. A polishing device comprising a body made of porous polyvinyl acetal material having a uniform pore size throughout the core material of the body with over 80% of the pores being below 40 microns in diameter, said body being coated with a low viscosity slurry comprising a hydrophillic urethane based adhesive and mixed abrasive particles of polishing materials which are cured to said body to form a thin abrasive skin which follows the contour of the pores of an outer surface of said body.

Claim 2. A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of Al_2O_3 and SiO_2 ranging in size from 0.1 microns to about 100.0 microns.

Claim 3. A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of Al_2O_3 and SiO_2 ranging in size 0.5 microns to about 7.0 microns.

Claim 4. A polishing device as claimed in claim 1 wherein said abrasive particles are selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 5. A polishing device as claimed in claim 1 wherein said polyvinyl acetal material has an average pore size of about 20 microns.

Claim 6. A polishing device as claimed in claim 1 wherein the weight of the adhesive particles is preferably less than 5% of the ~~wight~~ weight of said slurry.

Claim 7. A polishing device as claimed in claim 1 wherein said polishing device is a pad.

Claim 8. A polishing device as claimed in claim 1 wherein said polishing device is a roller.

Claim 9. A polishing device as claimed in claim 1 wherein said polishing device is a disk.

Claim 10. A polishing device as claimed in claim 1 wherein said cured skin is less than 1 millimeter in thickness.

Claim 11. A polishing device as claimed in claim 1 wherein the weight of the adhesive particles range from 5% to 80% of the weight of said slurry.

Claim 12. A semiconductor polishing device comprising a core body made of porous polyvinyl acetal material having a cylindrical roller shape and a outer surface, said material having a uniform pore size throughout with at least 80% of the pores ranging from about 7 microns to about 40 microns in diameter, a slurry of adhesive hydrophilic polymer of low viscosity and abrasive particles ranging from 0.5 to about 100.0 microns and comprising from 5% to 80% of the slurry by weight, said slurry being coated and cured on said outer surface of said cylindrical roller forming an abrasive skin.

Claim 13. A semiconductor polishing device as claimed in claim 12 wherein said abrasive particles are selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide,

silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 14. A semiconductor polishing device as claimed in claim 12 wherein said adhesive is selected from the group consisting of allphatic polyether urtheane methacrylate, aromatic difunctional polyether urethane methacrylate and allphatic urethane acrylate.

Claim 15. A semiconductor polishing device as claimed in claim 12 wherein said abrasive skin has composite particles having a size of about 1.2 microns.

Claim 16. A semiconductor polishing device as claimed in claim 12 wherein said abrasive skin is about 1.0 microns in thickness.

Claim 17. A semiconductor polishing device comprising a substantially cylindrical roller body made of polyvinyl acetal with its core having uniform material porosity with 80% of its pores ranging from 7 to 40 microns and an abrasive particle and low viscosity urethane adhesive composite skin cured to said core, said adhesive being selected from the group consisting of allphatic polyether urtheane methacrylate, aromatic difunctional polyether urethane methacrylate and allphatic urethane acrylate, said skin ranging in thickness from 0.5 to 7.0 microns.

Claim 18. A semiconductor polishing device comprising a core body made of porous polyvinyl acetal material having a cylindrical roller shape and a outer surface, said material having a uniform pore size throughout with at least 80% of the pores ranging from about 7 microns to about 40 microns in diameter with a fluid flow through rate which does

not distort the roller during the polishing process, a slurry comprising an adhesive of polyvinyl acetal material mixed with water having a viscosity less than the viscosity of said core material mixed with a composite abrasive material, said composite abrasive material comprising particles of abrasive material mounted in carrier particles of polyvinyl acetal, said slurry being coated and cured on said outer surface of said cylindrical roller to form an abrasive skin.

Claim 19. A semiconductor cleaning device as claimed in claim 18 wherein said metal is an abrasive material particle selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles, and combinations thereof.

Claim 20. A process of making a semiconductor polishing roller comprising of the steps of:

a. molding a roller of clean PVA sponge with over 80% of the pores ranging from about 7 microns to about 40 microns in diameter;

b. applying a coating of a slurry comprising an adhesive having a low viscosity and abrasive particles to the outer surface of said roller; and

c. curing said slurry skin to said roller body with ultra violet light forming a unitary roller device with a thin abrasive skin.

Claim 21. A process of making a semiconductor polishing roller as claimed in

claim 20 wherein said curing takes place over a period ranging from .1 minutes to 5 minutes.

Claim 22. A process of making a semiconductor polishing roller as claimed in claim 20 wherein said curing takes place in about 1 minute at about 300 watts.

Claim 23. A process of making a semiconductor polishing roller as claimed in claim 20 wherein said coating applied is less than 0.2mm in thickness.

Claim 24. A claim according to claim 20 wherein said abrasive material is selected from the group consisting of aluminum oxide, heat treated aluminum oxide, white fused aluminum oxide, black silicon carbide, green silicon carbide, silicon nitride, titanium diboride, boron carbide, tungsten carbide, titanium carbide, tantalum carbide, diamond, silica, silicon dioxide, iron oxide, chromia, ceria, cerium oxide, manganese dioxide, zirconia, titania, silicates, tin oxide, cubic boron nitride, garnet, alumina zirconia, zirconium oxide, sol gel abrasive particles and combinations thereof.

Claim 25. A claim according to claim 20 wherein said low viscosity adhesive is selected from the group consisting of formulated allphatic polyether urethane methacrylate, aromatic difunctional polyether urethane methacrylate; formulated multifunctional allphatic urethane acrylate and combinations thereof.

Claim 26. A process of making a semiconductor cleaning device comprising of the steps of:

a. precasting a product of clean PVA sponge;

b. preparing a coating mixture of cleaning material and PVA resin and water slurry;

c. curing the coating mixture to form a composite polymer;

d. grinding the composite polymer into a predetermined particle size;

e. coating said precast PVA sponge product with a slurry of low viscosity PVA;

f. placing the ground composite particles on the surface of said coated precast PVA product; and

g. curing said coated precast product to obtain an outer skin to which the ground composite particles are bound.